

10/019850

4/21/03

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
16 November 2000 (16.11.2000)

PCT

(10) International Publication Number
WO 00/68422 A3(51) International Patent Classification⁷: **C12Q 1/68**

(21) International Application Number: PCT/EP00/04036

(22) International Filing Date: 5 May 2000 (05.05.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
99108601.8 7 May 1999 (07.05.1999) EP(71) Applicant (for all designated States except US): **ROCHE DIAGNOSTICS GMBH** [DE/DE]; D-68298 Mannheim (DE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **MUEHLEGER, Klaus** [DE/DE]; Roemerstrasse 7, D-82398 Polling (DE). **ANGERER, Bernhard** [DE/DE]; Schuetzenstrasse 20, D-83024 Rosenheim (DE). **SEELA, Frank** [DE/DE]; Gutenbergstrasse 44, D-49076 Osnabrueck (DE). **ANKENBAUER, Waltraud** [DE/DE];Oberanger 18, D-82377 Penzberg (DE). **AUGUSTIN, Martin** [DE/DE]; Keplerweg 4, D-82152 Planegg (DE). **GUMBIOWSKI, Karin** [DE/DE]; Berlinerstrasse 6, D-49134 Wallenhorst (DE). **ZULAUF, Matthias** [DE/DE]; Tuetingstrasse 4, D-49088 Osnabrueck (DE).(74) Agent: **ROCHE DIAGNOSTICS GMBH**; Patent Department, D-68298 Mannheim (DE).

(81) Designated States (national): JP, US.

(84) Designated States (regional): European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published:

— with international search report

(88) Date of publication of the international search report:
4 April 2002

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: HIGH DENSITY LABELING OF DNA WITH MODIFIED OR "CHROMOPHORE" CARRYING NUCLEOTIDES AND DNA POLYMERASES USED

(57) Abstract: Subjects of the inventions are methods for enzymatic DNA labeling. Nucleotides modified to carry functional or detectable groups are incorporated into newly synthesized DNA by DNA polymerases. DNA is synthesized from modified nucleoside triphosphates by DNA polymerases such that the newly synthesized DNA consists exclusively of modified nucleotides or contains modified nucleotides in high density. There are provided modified nucleoside triphosphates which are incorporated by DNA polymerases and a group of DNA polymerases which incorporate these nucleoside triphosphates in high density.



WO 00/68422 A3

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 00/04036

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12Q1/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, CHEM ABS Data, MEDLINE, EMBASE, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 93 03180 A (EUROP LAB MOLEKULARBIOLOG) 18 February 1993 (1993-02-18) page 5-6	1-13
X	WO 92 06216 A (BOEHRINGER MANNHEIM GMBH) 16 April 1992 (1992-04-16) claim 1	1-13
X	WO 92 00989 A (ICI PLC) 23 January 1992 (1992-01-23) the whole document	1-13
	-/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

7 November 2001

Date of mailing of the international search report

22/11/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Gabriels, J

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 00/04036

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE BIOSIS 'Online! BIOSCIENCES INFORMATION SERVICE, PHILADELPHIA, PA, US; 1994 KOMMINOTH PAUL ET AL: "Evaluation of methods for hepatitis C virus detection in archival liver biopsies." Database accession no. PREV199598141463 XP002182194 abstract & PATHOLOGY RESEARCH AND PRACTICE, vol. 190, no. 11, 1994, pages 1017-1025, ISSN: 0344-0338</p> <p>-----</p>	1-13

INTERNATIONAL SEARCH REPORT

Information on patent family members

In: International Application No

PCT/EP 00/04036

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9303180	A	18-02-1993	DE 4214112 A1	04-02-1993
			DE 59209573 D1	07-01-1999
			WO 9303180 A1	18-02-1993
			EP 0597006 A1	18-05-1994
			JP 6509472 T	27-10-1994
			JP 3135572 B2	19-02-2001
			US 5912118 A	15-06-1999
WO 9206216	A	16-04-1992	DE 4038804 A1	16-04-1992
			DE 4041608 A1	25-06-1992
			AT 150092 T	15-03-1997
			AT 122104 T	15-05-1995
			AU 655781 B2	12-01-1995
			AU 8627591 A	28-04-1992
			CA 2052668 A1	10-04-1992
			CA 2093647 A1	10-04-1992
			DE 59105402 D1	08-06-1995
			DE 59108610 D1	17-04-1997
			DK 552203 T3	02-10-1995
			WO 9206216 A1	16-04-1992
			EP 0480289 A1	15-04-1992
			EP 0552203 A1	28-07-1993
			ES 2101706 T3	16-07-1997
			ES 2073771 T3	16-08-1995
			FI 931586 A	07-04-1993
			IE 913552 A1	22-04-1992
			IL 99663 A	31-12-1995
			JP 4258299 A	14-09-1992
			JP 6040839 B	01-06-1994
			JP 2673162 B2	05-11-1997
			JP 6501157 T	10-02-1994
			NO 305995 B1	30-08-1999
			NZ 240079 A	27-07-1993
			PT 99177 A ,B	30-09-1992
			US 6225094 B1	01-05-2001
			US 5753433 A	19-05-1998
			ZA 9108024 A	29-07-1992
WO 9200989	A	23-01-1992	WO 9200989 A1	23-01-1992